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Assessment of Partially-Averaged Navier-Stokes method for prediction of fluid flow and heat transfer in a matrix of surface-mounted cubes BRANISLAV BASARA, AVL List GmbH — The performance of the variable-resolution Partially-Averaged Navier-Stokes (PANS) method has been well documented for predictions of separated and wall bounded flows. However, its performance on applications which include a heat transfer is yet to be demonstrated. Therefore, the present work studies the flow in a matrix of surface-mounted cubes which is a well-known test case for the conjugate heat transfer. The recently proposed PANS z-f model is applied in conjunction with the hybrid wall treatment, which combines the integration up to the wall with wall functions. In adopted PANS approach, the filter width is controlled by specifying only one control parameter: an unresolved-to-total ratio of turbulent kinetic energy. The same modeling principles are applied on energy equation and on the wall heat transfer. Measurements, but also previous LES calculations, are used as a reference point to the present calculations.

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